

PLASTICS & MOLDED PRODUCTS

Volume 8

JULY 1932

Number 7



Product improvement provides opportunities for the custom molder

Today's keen competition is forcing manufacturers to give more attention to improved product design. It is the new idea, or an old one clothed in a new dress, that catches the public fancy and builds sales. Bakelite Molded so often makes possible better product design and appearance that it offers the custom molder many opportunities for new business.

An interesting example is the small coffee mill shown in the photograph. The housing is of green Bakelite Molded formed in four parts—two matched vertical

sections, a base and a lid. Contrasting with the green housing is the black Bakelite Molded handle. Any manufacturer would instantly recognize the increased sales appeal which Bakelite Molded has contributed.

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The improving, the pioneering that creates these accomplishments takes place first in the minds of men. The development of the actual product is time-taking, demanding study, research, financing and engineering. The most suitable materials must be determined and selected as well as the technique of their fabrication.

The molders associated in this group played important parts in the engineering and manufacturing of many of the foremost articles offered the public today. The combined experience and facilities of their plants and personnel are available to you.

Communications should be addressed to the Secretary of the Molded Insulation Section, National Electric Manufacturers Association, 420 Lexington Avenue, New York City.

PLASTICS & MOLDED PRODUCTS

Reg. U. S. Pat. Off.

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FEATURED among the summer new applications of synthetic plastic materials is the usual diversity of products. Toys, novelties manufactured specialties, packaging and machine parts—all productive activity can adopt some one of these new materials to improve an old line of merchandise or improvise a new departure.



Illustrated is the razor newly introduced by the Conrad Razor Blade Company of Long Island City. The use of lustrous Bakelite molded handles in various colors permits ready identification by those who insist that a razor, like a toothbrush, serves but one master. Ely Culbertson bridge wheel manufactured by Van Wickland Products Company, and molded of Bakelite material, mottled in effect, is a new, and ingenious device recently developed to aid people in learning to play Contract bridge.



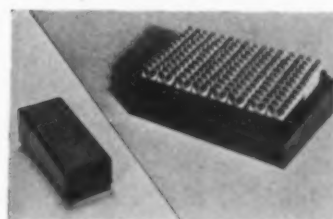
Some of the new novelties developed by the Du Pont Viscoloid Company, of New York City, for the little tot. The hobby-horse tooth brush holder, ducks, fish and rattle are of unbreakable plastic composition and are being offered in a wide range of colors and color combinations.



Something new in the way of packages. Cutwell burs are wrapped in transparent, moisture-proof cellophane, which gives the burs both easy visibility and complete protection. The all-Bakelite molded case consists of a partitioned tray, with cover, and contains three different assortments of packaged burs in individual 1-gross Bakelite molded bases.



Insulation Manufacturing Company, Brooklyn, N. Y., molds this ornamental tray out of Brazilian onyx Lumarith sheet stock, veneered on a metal base. The figurine is lacquered metal.



An industrial application where synthetic plastics replace older and more obvious materials. A Durez molded control wheel, molded by Norton Laboratories, Inc., formed in one operation which offers advantages of lightness, resistance to corrosion and a pleasant surface. For lightness, strength and improved appearance, the new vest-pocket Safe-T-Check Protector was molded out of Durez, by the Remler Company.



Laminated plastics—which are made in large sheets for architectural use—can now be had in colors, and with a Celotex core. An improved product which opens up a wider field of service for synthetic plastics.

Laminated Plastics in the Paper Mill Field*

By S. A. Staeger

Industrial Engineer
Westinghouse Electric & Manufacturing Co.

IN paper mill applications the question of quality and characteristics of materials is an important factor and should often be the determining consideration in the selection of many of the things which are used. In the design of a machine or part of a machine the suitability of the material entering into it may determine the success or failure of the device and it is sometimes exceedingly difficult to find materials having characteristics which will satisfactorily meet the various demands made upon it. Paper mill practice over a long period of years has brought out many new uses for old materials and has stimulated the development of new materials intended to provide the several characteristics required which are sometimes apparently quite divergent and one would sometimes think contradictory.

Micarta is one of the relatively new materials coming into extensive use in paper mill ap-

plications and it has been found that it has characteristics making it rather phenomenally versatile. It has high strength yet is not hard like steel. It has great resistance to wear and yet can be molded and machined so that it can be produced in almost any desired form. It is light, weighing only about one-half as much as aluminum and has a very low adhesion or affinity for paper and pulp fibres.

Standard Shapes

Micarta is made in the form of tubes, plates, angles, rods, solid blocks, etc., and can be fabricated by cementing together. Micarta plates can be cemented together by means of lap joints or by butt point construction with a joint strip on one side, and angles or other forms can be cemented to plates so that structures of almost any shape can be built up forming tanks, or tank linings, conduits for the flow of stock, save-all pans, etc., of almost any conceivable shape

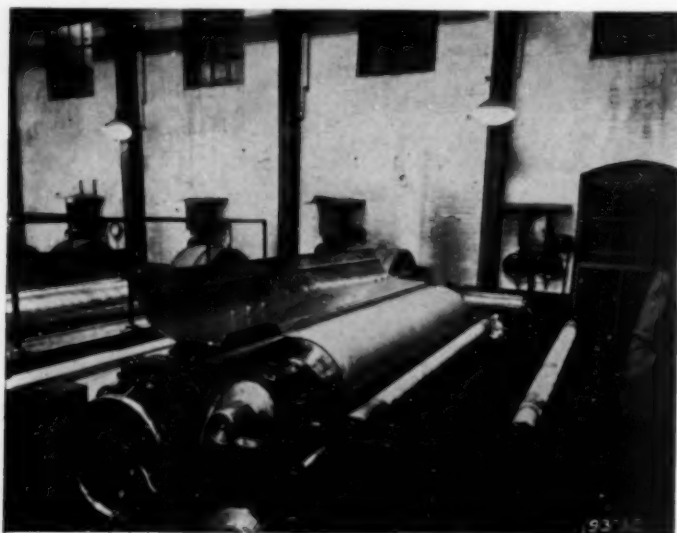
desired and if necessary such structures can be reinforced for additional stiffness by cementing stiffening members on the back side as would be done in structural steel design except that no riveting is required and the cementing can be done so that no strength will be lost.

In cementing members together procedure should be followed similar to the methods used in glueing wood parts together. The surfaces must be true and clean, with the gloss and varnish removed. Pressure should be applied after the cementing is done so that the surfaces will be tightly pressed together, at every point, with sufficient pressure to squeeze out any excess cement. These precautions are essential if a strong and water-tight joint is to be made.

Doctor Blades

One of the applications where Micarta has been extensively used in paper mills is for doctor blades. Micarta doctor blades have been used for press rolls, dryer rolls and calender rolls. For press rolls Micarta produces less wear on the roll and does not wear rapidly itself. For dryer rolls there is no tendency to cut and a very light film is deposited on the dryer roll which seems to prevent it from rusting. For calender rolls the Micarta doctor blade has also given excellent service.

Something new in bearings has been developed within the past few years in which a Micarta lining is provided. The fabric of the Micarta instead of being applied flatwise is wound



Laminated doctor blades give highly satisfactory service for press rolls, dryer rolls and calendar rolls.

*Presented before the annual meeting of American Pulp & Paper Mill Superintendents' Ass'n, June 2, 1932.

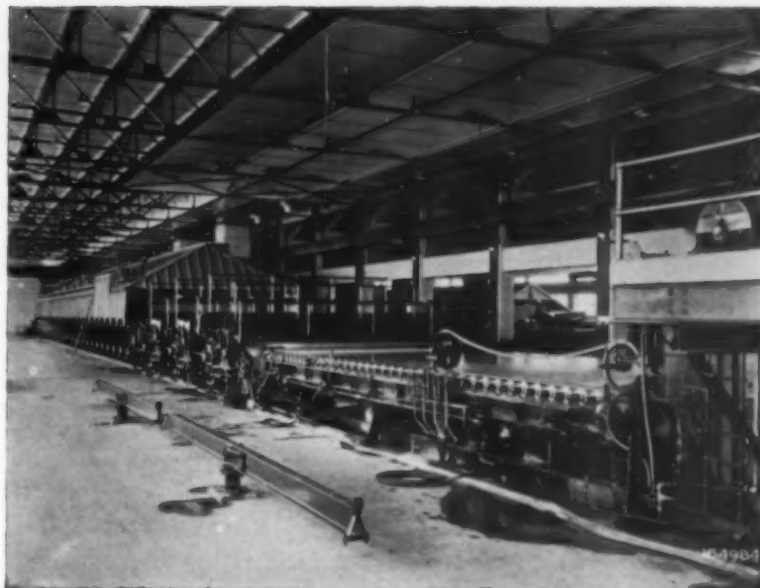
edgewise and molded so that the grain is radial. This type of bearing lining has been used extensively for steel roll neck bearings where an increase in bearing life of several hundred percent usually results. This type of bearing is good for pressures up to 2000 lbs. per square inch and either oil or water lubrication can be used. The fact that water lubrication is entirely satisfactory for Micarta bearings makes it especially suitable for bearings in stock chests, vats, pumps, and other places where it is difficult to maintain oil lubrication, and where it has been found necessary heretofore to use lignium-vitae bearings. Micarta shows a life under such conditions several times greater than is usually obtained with lignium-vitae bearings or any other materials heretofore used.

Graphitized Bearings

The graphitized Micarta bearing is another variety of this product which has marked advantages over graphitized bronze or babbitted bearings because the Micarta does not seize or grip the journal or shaft when the graphite no longer furnishes a complete support to the load, or under failure of lubrication. Graphitized Micarta bearings are used in out-of-the-way places and where lubrication is difficult or liable to be forgotten or overlooked and usually where pressures are not as high as in the case of the oil or water lubricated bearings. For relatively light work Micarta tubes of suitable material and where properly lubricated may be used as bearings.

There are many grades and types of Micarta specially designed for different kinds of service and it is essential that the right grade of Micarta be used for the various purposes and many of these applications have required a great deal of development work to produce a Micarta exactly suited to the requirements.

Micarta roll covers are one of the most promising of the rela-



The paper making machine and many of its auxiliaries utilize numerous laminated parts. Roll covers, blades, bearings, pipes, troughs and pans have high mechanical and chemical resistance.

tively new applications in the paper mill. Micarta covered tube rolls have now been in continuous operation for more than a year. Numerous installations of Micarta table roll covers have been made on machines of various sizes and speeds and there is every indication that the Micarta roll cover will be the solution to many of the perplexing problems in the past. A Micarta covered aluminum tube roll makes a very light roll, retains a perfect balance, resists corrosion and the attacks of weak acid and alkalis found in the pulp solution and retains a smooth homogeneous surface with a very low coefficient of friction so that the wear on the wire is reduced to a minimum and because of the very low affinity of Micarta for the stock fibres material does not adhere to the roll. Micarta is substantially water-proof, absorbing only a minute trace of moisture and can, therefore, be used in wet places and for such purposes as roll covers without loosening or giving trouble.

Pans, Blocks and Covers

Micarta has been used for vibrating screen toe blocks with great success because of its wearing qualities and resistance to shock. Micarta pipes,

troughs, save-all pans, etc., have an advantage in that the stock does not seem to cling to the surface, thereby avoiding lumps.

Flat box covers are coming into favor for wire and felt suction boxes. The rate of wear is much less than for wood, and as the coefficient of friction is less the wear on the wire is also less. A built-up suction box cover, with the laminations and fibres at right angles to the travel of the wire is preferred. This is the arrangement used in our heavy duty Micarta bearings which have shown much longer life than other types of construction.

Other Uses

Micarta wainscoting for office buildings and similar applications is one of the new uses for Micarta coming into extensive use. Desk tops are also made from Micarta and it is an excellent material for table tops in sorting rooms and for numerous applications where a smooth uniform surface is required.

Hundred of tons of paper are used in the manufacture of Micarta which should make it an item of special interest to the paper industry. Cotton fabric is also used in certain types of Micarta where characteristics are



Bearings of the oil-less type, lined with Micarta, find many paper mill uses.

required which cannot be obtained with the paper base.

Fourdrinier shake springs of a special Micarta structure have marked advantages over other materials. Attention must be given, of course, to correct thickness and dimensions as well as to the proper type of Micarta.

Because of its great strength and wearing qualities Micarta has for years been extensively used for gears and pinions. An excellent combination is to run a Micarta pinion with a cast iron or steel gear, which makes the operation extremely quiet. Hundreds of thousands of Micarta timing gears are made from Micarta.

Hammer Bearings

Micarta has been used very successfully for chip hammer bearings in hammer mills. Lubrication of the usual kind is of course difficult or impossible but the Micarta stands up very well in this severe service. Micarta has such unusual characteristics and properties that it could be well considered for most any special and exacting application.

Micarta is a strong dense material made by hot pressing sheets of fabric material which previously have been impregnated with an organic binder. All grades of Micarta possess good insulating properties. The grades which are recommended particularly for insulating uses combine high dielectric resistance and mechanical strength with high insulating resistance, low power factor and low moisture and oil absorption. These grades which are particularly suitable for mechanical application are exceedingly strong and tough. Micarta is easily machined, takes a high polish and holds

its original shape under extreme service conditions and exposure to greatly different atmospheric conditions. Some grades are infusible and unaffected by heat until the temperature is high

enough to carbonize the material. Other grades are designed to soften very slightly at high temperatures to facilitate the punching of different shapes. Micarta is insoluble in all known solvents. Dilute non-oxidizing acids have little effect upon it.

The possible uses of Micarta in the paper industry have hardly been touched, and it is expected that as a greater familiarity with this material and its many advantageous characteristics is obtained many new uses will be discovered for it.

Pyroxylin Costume Jewelry Vogue Continues in Paris

NECKLACES have a more important place than ever in costume jewelry, says the Paris office of the Du Pont Style Service, and, as a rule, are more in evidence and offer a much larger field than bracelets. Rings and earrings are receiving very little attention. The models of earrings being displayed usually consist of fine composition rings in degrade effect, particularly in several shades of blue and purple. Signet rings in chromium-plated metal, with incrustated squares of bright-colored pyroxylin plastic, are engraved in contrasting shade.

Fancy brooches and ornaments for bodices are now being replaced by flat clasps, no longer triangular, but in the shape of a narrow rectangle disposed vertically. Some are in metal as well as in plastic composition, and have the appearance of a small piece of ribbon.

Interest in novelties, however, lies chiefly in the line of necklaces. Chokers, usually combined with metal, and longer necklaces composed of twisted or braided bands of plastic beads are the two popular types. Pendants, while less in evidence, have long strings of rayon braid in black, bright blue or red, with a large heavy single ornament

in transparent composition, usually an imitation emerald or topaz.

The new chokers are close-fitted necklaces of plastic beads alternating with metal and chromium-plated links, which are disposed so closely together that they look like parts of a metal spring rather than chain links. Pyralin is used in the new necklaces composed of two solid curved bands, which are fastened together on the sides by a metal clasp. Necklaces with beads in graduated sizes are less in evidence. However, there are a few models composed of bright-colored transparent composition beads, which are beveled on the edge.

Long Necklaces

Longer necklaces composed of thick twisted strands of tiny plastic composition beads are very popular. They are in off-white imitating ivory and also in harmonious shading effects, particularly in degrade tones of blue. Some necklaces are also composed of strands that have a sort of plaited or woven effect. The latest novelty is of twisted strands of very small plastic beads in vivid colors ranging from bright blue, vivid

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Mixing, Grinding and Pulverizing

By Max Mosher

District Manager, Gruendler Crusher & Pulverizer Co.

PLASTICS, their manufacture and uses are playing a continuously growing part in the general growth of industry. In the past few years hundreds of articles formerly made of wood or metal are now molded. This growth has caused manufacturing expansion which in this time of depression is used only to a small percentage of former capacity. Following the now common tendency prices have been severely cut—so much so that in order for plants to operate on any profitable basis all manufacturing costs must receive their share of pruning. This necessitates a careful study of labor and equipment.

The manufacture of a moulding compound is not simple. It involves many processes, among which are, mixing, grinding, and crushing.

Below: Whirlbeater type of crusher used for preliminary crushing of sheets. No air conveying is used.

Right: Peerless type of crusher direct connected to fan, with cyclone collector and tubular dust collector used for the granulating of the finished product.



A moulding compound is not a single substance. It is composed of various types of synthetic resins with varying proportions of filler, generally wood flour. The proportions of the different ingredients depend upon have been severely cut—so much material is to be put, and the success of any grade depends upon its uniformity and homogeneity. Assuming that the chemical constituents are uniform the problem is to make a continuously homogeneous mass, with uniformly graded particle size. The molder then can operate his presses under constant conditions and turn out manufactured articles which are of proper weight and finish.

It is readily seen therefore that in order to obtain material which will meet these specifications the plant equipment must

be capable of producing a physically constant moulding product in any required grade.

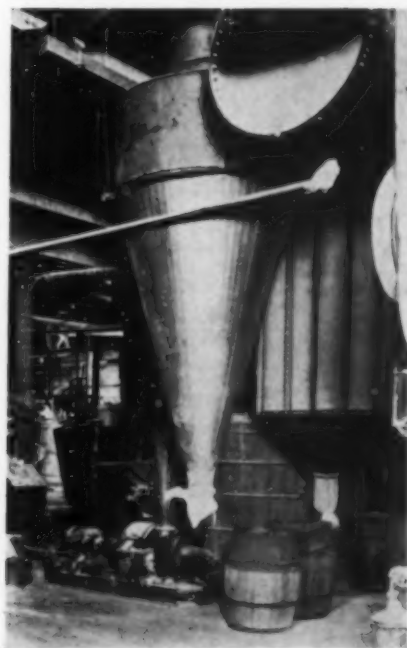
The machinery upon which this depends are

1. Percentage feeders
2. Mixers
3. Grinders
4. Crushers

In considering the functions of the above machines no attempt will be made to follow the complete manufacturing operations in their proper sequence. This involves equipment beyond the scope of this article. Each operation will be considered by itself and apart from its actual place in the process.

Let us assume some specific grade of finished product is desired. It is composed possibly of four ingredients each of which must be added in definite amounts. This is the function of the percentage feeder, and upon their accuracy depends the performance of the other equipment. Unless the correct quantity of each ingredient is added, no matter how good the mixer is the product will be wrong even though uniform. The component parts being properly proportioned the function of the mixer is to furnish a uniformly mixed product. Generally it has been found necessary to further treat this mixture by passing it through a pulverizer in order to make a more intimate mix. Continuing the operation there is finally produced a sheet of finished moulding compound which must be reduced to the commercially sold product. These sheets are passed through preliminary crushers whose sole function is to reduce them to

(Continued on page 286)



Patents and Prosperity*

By Joseph V. Meigs

Patent Attorney

FIFTY-EIGHT years ago this spring the depression of 1873 was in full swing. Three hundred steel mills were cold. Insolvency was the order of the day. Three million men were unemployed, of whom five hundred thousand had been engaged in railroad construction. The vision of a mighty empire bound together with bands of steel rails, and covered with lattice-works of railroad ties had been glimpsed, but efforts to realize it had gone ahead too fast; and, as is always true when dreams fall short of realization, the reaction which followed was heightened by deep despair and a gloomy sense of failure and the futility of effort. Numerous railroads went into receivership. Thousands of commercial failures stampeded the general rout of the army of business. The color of the picture was just as black then as now. Nevertheless, a period of great prosperity was in the making.

In Other Depressions

A number of new inventions were being brewed in the kettles and vats of American and foreign genius and from these vessels there was soon to pour forth a flood of new business life and activity. Notable among these and at an advanced commercial stage in the spring of 1874, was the Bessemer-Kelly process of making steel which during the preceding twenty years had passed through its period of "gestation" and was now fully perfected. The process constituted an epoch-making pioneer inven-

tion. It comprised blowing air through molten pig iron, thereby oxidizing impurities and permitting the manufacture of steel in large quantities at a greatly reduced cost. The first American steel rails had been rolled in Chicago in 1865.

The industrial development of the Bessemer process, far from being destroyed by the 1873 crash, played a prominent part in reviving trade. The cheap steel provided by the Bessemer process pointed the way out of the depths. Railroads already built had to be made over with steel instead of iron, and Bessemer steel began to be produced in large quantities for rails and locomotives. In the twenty years following the 1873 crash over 100,000 miles of steel railroad were built, mostly, if not all, with Bessemer steel. In the same period, American inventive genius produced other inventions of vital importance, including Bell's telephone (1876), Edison's phonograph (1878), Hyath's reinforced concrete (1878), Edison's electric lamp (1880), and many others. Westinghouse had been granted a patent for his air brake in 1869.

From 1874 to 1892 there was a steady and rapid increase in invention and business activity. The national wealth increased roughly 100 per cent during that period, that is, from about \$35,000,000,000 in 1873 to about \$70,000,000,000 in 1892. A substantial portion of this increase was embodied in the application of the inventions referred to and others not mentioned. There cannot be much doubt of the influence of invention upon the

period of prosperity following the 1873 crash. The telephone, of course, became a necessity as soon as its technical and commercial success was fully achieved. The public always buys, uses, or invests in a real necessity. The rapid growth of the telephone business in this period is testimony of the part it played in doubling the national wealth during the 1873-1893 period.

Came the Radio

The scene shifts. It is early spring in 1921, forty-eight years later. This time the whole world has been through the artificial expansion and orgy of spending incident to a war carried out on a gigantic scale and the deflation of the post war period finds business in the doldrums. But yet another period of prosperity is ahead. The cumulative inventions of Marconi, De Forest, Alexanderson, Fessenden and others had shown that the human voice could readily be transmitted through the ether. Amateurs had begun to build radio sets. The idea was so inspiring that the building of home-made radio sets had become a national hobby, but it was somewhat difficult to get the parts. Harding had been elected President in the fall of 1920 and the Westinghouse Company broadcast from Pittsburgh the inaugural ceremonies in March, 1921. The success of that broadcast seemed to mark the starting point of a great public interest in radio broadcasting and reception. In the fall of 1921, station KDKA was established in Pittsburgh; soon other broadcasting stations were equipped. Orders

*Reprinted from *United States Law Review*, May 1932.

began to pour into electrical companies for accessories with which to build radio receiving sets. Vacuum tubes could not be made fast enough. By the fall of 1924 a new industry, radio, had been born. Business was again on the upgrade, the long upgrade that led to the greatest era of prosperity that the world ever saw—culminating in the crash of 1929.

We are now in the throes of that crash and the present depression seems to imprison business behind impenetrable walls of resistance to recovery. Markets are glutted with familiar things. On the one hand, strong boxes and savings banks are flooded with money. On the other, there are idle plants, large stocks of unsold goods. The best salesmen in the world are doing their utmost to bring the money to the commodities and the commodities to the money, and effect an exchange and movement of both with relatively little success.

There is no single, simple answer to this stalemate, but new ideas, new products, new processes, new industries, in a word, inventions—these things have played a vital part in previous periods similar to the present one—have been one of the forces in boosting us out of previous “sloughs of despond”—and will do the same now.

The question naturally arises: What new industry or invention will help us this time? That is a difficult question. Time only will enable us to give a suitable answer. Certain it is, however, that were a new commercial successful invention to make its appearance—let us say an improvement having today the relative importance that the telephone had at the time of its debut,—then a stimulus would be provided that might well hasten us on the road to a business normalcy.

To take a purely hypothetical and illustrative example, let us assume that some radical im-

provement in motor transportation by land should make its appearance; let us say, a motor car retailing for less than \$1,000 in which one could easily travel at 150 miles an hour in safety and comfort. Let us assume also that such an improvement would substantially annihilate space, that a trip from New York to Boston could be made in less than two hours, and one from New York to Los Angeles in something like twenty hours. Let us further assume that such a vehicle would demand an entirely new system of roads, possibly a system of overhead roads supplementing the present transportation arteries. Even now speeds of seventy miles per hour along interurban roads are common and numerous overhead highways are in existence. Such an improvement as outlined above might itself so fire the public imagination that people would be shaken out of their despondency—and of course the manufacture and sale of the new product and the building of new roads would greatly stimulate business and put money into circulation. The example given is purely a fanciful one and its purpose is merely to serve as an illustration of the general thesis, viz., that business and prosperity depend to a very substantial degree on invention.

Protection by Patent

Inventions, however, unless they are of the rare kind that can be commercialized and still kept secret are of little value without the aid of the law. Society has not yet reached and may never reach the stage where individuals can depend on purely ethical or moral standards for relief from the pirating of inventions. So, if Tom Brown invents the new motor vehicle referred to above and organizes a corporation to manufacture it, it is doubtful whether purely moral considerations will prevent Bill Jones from copying

(Continued on page 289)

Shaw Insulator Company's Products Exhibited by Chamber of Commerce

THE recent Shaw Insulator Company's exhibit, installed in the lobby of the Robert Treat Hotel in Newark, N. J., brought to light numerous interesting specimens of the plastic molding art. Articles featured, from arch supports for shoes and slippers to a golf scorer fastened onto the shaft of a club, offered varying degrees of utility. Included among the many molded parts and devices displayed were mo-

tion picture developing rack, cross tracks for toy electric trains, toy pistol, razor (completely molded), contract bridge wheel, castanets, welder's goggles, lathe hand-wheel, asbestos braiding shuttle, and countless other applications in almost every field of human endeavor.

This display was one of a series of exhibits sponsored by the Newark Chamber of Commerce to focus attention on the manufactories centred within the Newark Industrial District.



Shaw Display at the Robert Treat Hotel, Newark, N. J.

Photo courtesy Bakelite Corp.

The Color Age in Plastics

A Review of Merchandising and Technical Trends

By Alfred J. Steinberger

MANUFACTURERS and distributors in all lines of industry still consider this the "Age of Colors".

Colors have been associated primarily with wearing apparel and fabrics generally which have appealed almost exclusively to the feminine eye and taste. Today, however, colors have not only entered into, but are in demand, in lines of trade never dreamt of before as having color possibilities and values.

To cater to the male taste also, we now have colors in office equipment, sporting and smoking accessories, automobile trimmings, and ornamental hardware, while in the home, colors are in vogue in articles such as refrigerators, clocks, cooking utensils, bath room essentials and toilet articles.

The Demand for Color

In many instances reference to the "Color Age" can include, in the same breath, the "Plastic Age" as many of the articles in greatest demand today are moldable with equipment available in plastic molding plants.

Those molders who are already so equipped are now reaping the benefits of this foresight, in having secured production orders for various color articles. This fact, becoming generally known to seekers for or users of colored moldings is bringing increasing inquiries and orders.

The "Color Age" brings to the molder the thought that here is his opportunity to at last get a fair profit for his molded merchandise. It places him in the position not only to exercise his engineering skill which he has had to do in the past, but his

artistic ability and ingenuity as well. In studying nature's colors, he can visualize various applications where forms capable of being molded, would be improved by the substitution of colors.

Some of the latest materials offered the molding industry, thermoplastic as well as reactive, are of a type where all of nature's colors are capable of reproduction. Some of the thermoplastics, in particular lend themselves to the true reproduction of marbles and precious stones as well.

There is no gainsaying the fact that the "Age of Colors" is no mere passing fancy. It is not only here for today or tomorrow but for an indefinite period of time and for articles of a nature where only pleasing colors of eye appeal, such as pastels, bright mottles, marbles, shells and pearl, can apply. A large proportion of such articles are in the real quality as well as quantity class, some of them running into millions of pieces.

In the handling of colored plastic materials, it is obvious that cleanliness is absolutely essential in a molding plant so as to prevent contamination. This condition must prevail not only during the actual molding operation, but also in the handling of the materials beforehand.

Molding Colors

Manufacturers of these molding materials, as a rule, exercise the greatest care in the various operations through which the raw ingredients pass during the processing periods. Cleanliness is their byword, not

only in the inspection of materials they purchase but also of those they make themselves. Consequently, colored materials ready for molding should reach the molders hands uncontaminated. One false step, however, on the part of the molders can undo all of these preliminary precautions.

Colored materials should be stored, opened, weighed or cut in an absolutely clean room after thoroughly cleaning the outside of the container in another room.

Plant Cleanliness

From the moment the containers in which colored materials are shipped, leave the plant of the manufacturers, they begin gathering dust and dirt. The containers cannot help but have crevices and projections in or against which contaminating particles have lodged. Consequently, from the moment these containers arrive at the molders plant, great care must be taken to prevent contamination of their contents. Dirt should be carefully wiped from the containers and dust blown off and out of all crevices, etc., before attempting to open the cover even where a protective covering is inside of the container and directly around the material itself.

Any light colored molding material, no matter in what form, will immediately become contaminated when exposed to the air if for only a short time. Often when not exposed but in a closed container fine dust particles seep through in any opening or crack. Therefore, too much attention cannot be paid to exercising the greatest care

PLASTICS & MOLDED PRODUCTS

in handling the materials before molding.

Where varied colors are molded at adjacent presses, segregate these presses individually, as above. The slight cost of so doing will be more than offset by the greater amount of moldings passing inspection instead of being rejected on account of contamination.

Many of the progressive up-to-date molders are taking unusual precautions in their color press rooms to prevent contamination. Some of them have erected special buildings, others have placed their presses on another floor. One of the latter, located in the East, has the walls and ceiling of this color molding room painted a very light color, the floor a light gray, and all pipes and presses will also be painted a light color so that the presence of dirt will be easily detected.

Another plant in the central west, in addition to having erected a new light airy building is considering having all employees working in this color division dressed in white uniforms. Those wearing these uniforms will continually have instilled in their thoughts and actions the idea of cleanliness. The psychology of seeing each other thusly clothed will cause them to take every precaution to keep everything they handle, including themselves clean.

The primary thought of customers, whether present or future, going through such plants or knowing of these conditions, will be that their products cannot be in better hands; that in placing orders with such plants, they can rest assured that their molded parts will have every attention; that conditions such as these cannot help but prevail in every department.

Cleanliness and accuracy are the prime considerations here and quality production assured under such ideal conditions.

Where color molding is done in the regular dark color press rooms, it is practically impossible to prevent contamination. Dust and dirt has been gathering on the walls and ceilings, beams, floor cracks, pipes and presses, in fact on all exposed surfaces with or without projections and depressions. Some of this dirt is either shaken or blown down by vibration or air currents. It may be blown around by an operator cleaning his mold at an adjacent press, careful as he may try to be.

Cleaning Molds

The mold may have been thoroughly wiped out or cleaned by air, under pressure, before placing clean colored molding material in it. This very air, however, has only tended to stir up the nearby dust particles and caused all dormant ones within reach of this air blast, to be stirred up also. A separated molding room or building is absolutely essential if a good job in colors is to be done.

On a sunny day, in a supposedly absolutely clean molding room, stand near a window, door or other opening and notice the dust particles floating in the air as they pass through the sunbeam. This illustrates better than anything else, the amount of dust liable to settle on any article within that room. This fine dust, invisible to the naked eye, except under the above conditions, will not be noticeable on any article, unless it has been settling for a long period of time.

Curious as it may appear, this fine dust after settling for ever so short a time on any light colored molding material, will come to the surface of the molded article during the molding operation. Result, a rejected otherwise perfectly molded piece. Contamination has triumphed here. Precautionary cleanliness should be the watchword in color molding.

British Industry Notes

By A. C. Blackall

Abandonment of Gold Has Assisted British Plastics Industry.

ACCORDING to statistics just issued in the United Kingdom, that country was producing 17 per cent of the world's plastic products before it abandoned the gold standard, as compared with 40 per cent produced in America and 23 per cent in Germany, the remaining 20 per cent being distributed among the rest of the world. Although the world production has been immensely increased during the last six months, statistics now go to show that the United Kingdom's share of the world output has increased to 25 per cent.

British Button Industry Declining

WOMEN are now using far fewer buttons than formerly, thanks to the introduction of zipper fasteners and other influences, and how this has affected the button trade is shown in the fourth census of

industrial production made in Britain in 1930, the details of which have just been issued.

In 1924 the number of buttons and studs produced in the United Kingdom was 8,484,000 gross; by 1930 the number had fallen to 6,352,000 gross.

New British Plastic Materials

TWO new plastic materials, "Acelloid" and "Gramaphoid," have recently been placed on the British market by the General Plastic Corporation. The former is a cellulose acetate material from which a variety of fancy goods and novelty articles are being molded. The latter is a very high grade phonograph record material, details of which have not yet been disclosed, but which has been accepted by the British phonograph industry as a suitable material for producing records of the highest quality. Further details of these interesting materials are expected shortly.

New Facts on Plasticizers

Eastman Kodak Chemist Sheds New Light on Cellulose Acetate Plastification With Special Regard To Unusual Flexibility

THESE inventions relate to cellulose acetate compositions, and more particularly to compositions containing cellulose acetate and plasticizers in such a proportion as will give the product very high flexibility.

The addition of plasticizers to cellulose acetate for inducing flexibility in the product with which the plasticizer is incorporated has, of course, been practiced for decades, and the plasticizers hereinafter mentioned may even have been employed with cellulose acetate in small proportions. However, the flexibility of a sheet made from such a composition of matter, for instance such as photographic film base, is such as permits the sheet to be bent several times, but the sheet has little extensibility and without the use of heat or solvents to soften it, it will not conform readily, for instance, to an irregular surface or shape as may well be desired for certain uses.

No one has to my knowledge heretofore incorporated with cellulose acetate the plasticizers herein named in amounts approximately equal to the weight of the cellulose acetate employed, or in other words, approximately 100% of the plasticizer based upon the weight of the cellulose acetate, in order to obtain a more flexible product than that referred to above. Furthermore, it was entirely unexpected that one could incorporate as much as 100% of this plasticizer in a cellulose acetate composition, for the reason that many plasticizers have been found to be incompatible with cellulose acetate in amounts in excess of 50% and frequently in amounts

In a series of three patents assigned to Eastman Kodak Company, Henry B. Smith describes a novel composition combining large proportions of plasticizers heretofore used in modest quantities, resulting in improved qualities in film, artificial leather and other products.

as low as 30% or even 10%; the addition of more than these percentages of the plasticizer merely resulted in the plasticizer crystallizing out, the solution gelling, the product becoming hazy or opaque, or otherwise becoming useless.

100% Plasticizer

I have found that, upon the addition to cellulose acetate of approximately 100% of these plasticizers, quite unexpected compatibility of the plasticizer with the cellulose acetate exists and also that quite unexpected flexibility, plasticity and clarity of the final product results. Such compositions have great utility where a highly flexible compound is desired, such as the coating of a base (for instance, cloth or other fabric) in the production of artificial leather or the production of relatively thin sheets wherein more than the usual flexibility is important. Such a composition, if converted, for instance, into sheet form, will be found to be supple and nonrigid, and to have the ability to conform readily to a surface upon which it may be placed, and this even at atmospheric temperatures.

It is among the objects of these inventions, therefore to produce a composition of matter containing cellulose acetate which has a high degree of flexi-

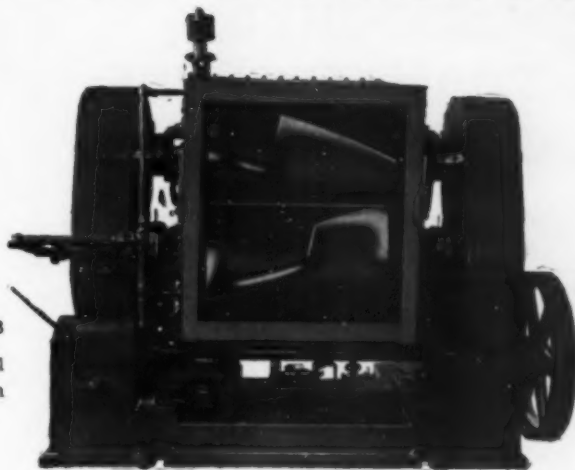
bility, plasticity, extensibility and clarity. It is a further object of my invention to employ a certain plasticizer in proportions much higher than heretofore attempted. Another object of my invention is to prepare artificial leather by coating a cellulose acetate-plasticizer composition upon a fabric or other base.

Following are specifications of U. S. Patent No. 1,858,285: I have found that it is possible to incorporate with 100 parts of cellulose acetate approximately 100 parts (or in other words approximately 100%) of guaiacol acetate. This novel composition of matter is produced by merely mixing the plasticizer with cellulose acetate and then adding sufficient of a common solvent, such as acetone (assuming acetone-soluble cellulose acetate is employed), whereupon an intimate mixture of the plasticizer with the cellulose acetate results. The amount of acetone or other common solvent to be employed varies, of course, within rather wide limits depending upon the fluidity of the composition desired. 200 parts of acetone will suffice for many purposes, although I prefer to use 400 parts. Various high boilers or evaporation retardants, such as ethyl lactate, amyl acetate or the like may also be added if desired, as is well known in this art.

The composition of matter so produced may then be coated into sheets in the usual way by depositing it upon plates or rolls and permitting the solvent to evaporate. Sheets so produced were found to withstand 21 folds when tested upon the modified Schopper fold-tester

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widely used in paper testing, whereas a check sheet plasticized with approximately 20% of one of the commonly used cellulose acetate plasticizers withstood only 5 folds. Furthermore, sheets plasticized with 100% of guaiacol acetate retained flexibility when kept at a temperature of 65° C. for over 200 days, whereas the check sheet referred to above became brittle in 44 days.

Artificial Leather

If my novel composition is to be employed in the manufacture of artificial leather, it may be coated upon, for instance, a cloth support and the solvent permitted to evaporate, or the cloth support may be caused to pass through the cellulose acetate-plasticizer composition and permitted to absorb the solution, the solvent in the coating being then permitted to evaporate. In either case, the solvent may, of course, be recovered if desired by condensing the vapors, etc.

While above and in the claims appended hereto, I have referred to the use of a plasticizer in approximately equal proportions, namely in a ratio of approximately 100%, it will be understood that within this terminology variations of from 10 to 15% less than 100% of plasticizer and as much as 25 to 50% more than 100% of the plasticizer may in some instance be desirable.

Salicyl Aldehyde

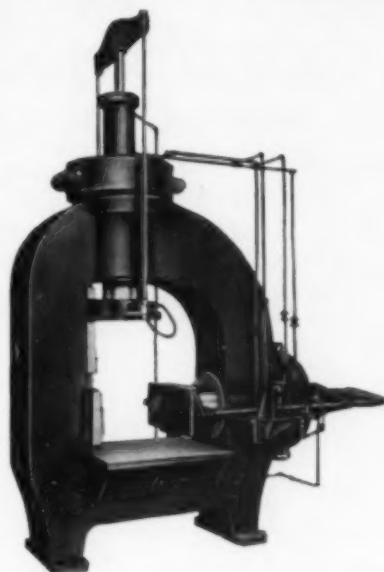
Following are the specifications of U. S. Patent No. 1,858,286: I have found that it is possible to incorporate with 100 parts of cellulose acetate approximately 100 parts (or in other words approximately 100%) of salicyl aldehyde.

This novel composition of matter is produced by merely mixing the plasticizer with cellulose acetate and then adding sufficient of a common solvent, such as acetone (assuming acetone-soluble cellulose acetate is employed), whereupon an intimate mixture of the plasticizer with the cellulose acetate re-

(Continued on page 285)

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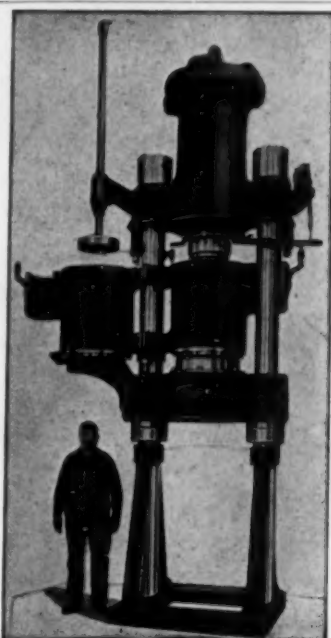
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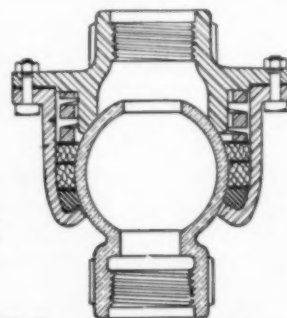
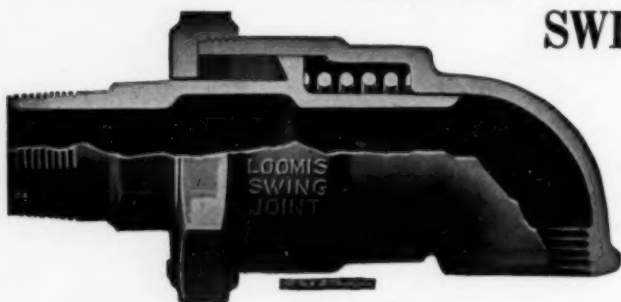
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NEWS of the INDUSTRY

Reynolds Spring Co. Adds to Sales Staff

MR. C. J. Terrill, formerly with Kurz Kasch Company, Dayton, Ohio, has joined the Reynolds Spring, as Manager of Sales in their Ohio territory. Mr. Terrill will cover Ohio, Indiana and Kentucky.

Mr. W. B. Knickerbocker, formerly of The Knickerbocker Company, Jackson, Michigan, has joined the Reynolds Organization, handling sales of Molded Plastics and Bonnyware in the Michigan territory.

Mr. Wm. M. Coatsworth, formerly of the Beetle Ware Corporation has joined the Reynolds Spring Company as Manager of their New York Office. The office is at No. 1 Wall Street. Mr. Coatsworth will handle sales of Plastics and Bonnyware in the Metropolitan District, Jersey and Lower New England.

Belgian Trade Opportunity

LES Etablissements E. R. Verhaege, 24 Rue des Juifs, Antwerp, Belgium, have just started a wholesale business in finished molded articles. Their sales staff covers Belgium and neighboring countries. They wish to get in touch with American molders who have a line of standard articles, either fancy or household, to act as distributing agents in their territory.

Micarta Wall Panels

WALL panels of Micarta with Celotex core are manufactured especially for interior wall paneling, store window backgrounds, decorative screens and partitions.

The panels come shop-finished; colors range from solid, jet black to wood grains, marble designs and tapestry patterns, and special "unique" designs. The finishes are either satin or high

gloss. Stock sizes are 48" by 96", in 1/2" and 7/8" thicknesses; the Micarta facing is 1/16".

Qualities: surfaces harder than wood; unaffected by temperatures up to 248 degrees F.; will not rise or peel; light in weight; no breakage; easily worked and installed without special tools; good heat and sound insulation; impervious to solvents and water.

Du Pont Viscoloid Designer Judges Leominster Art Contest

A. S. Donaldson of Leominster, Massachusetts, designer and creator of products for the Du Pont Viscoloid Company, has been named as one of the jury which is annually selected to award prizes for the work done by the students of the design department of the Massachusetts School of Art. His associates on the jury are Roland Cosimini, artist, and Harry Harding, Art Director of the Barta Press, both of Boston.

New Facts on Plasticizers

(Continued from page 283)

sults. The amount of acetone or other common solvent to be employed varies, of course, within rather wide limits depending upon the fluidity of the composition desired. 100 parts of acetone will suffice for many purposes, although I prefer to use 400 parts. Various high boilers or evaporation retardants, such as ethyl lactate, amyl acetate or the like may also be added if desired, as is well known in this art.

The composition of matter so produced may then be coated into sheets in the usual way by depositing it upon plates or rolls and permitting the solvent to evaporate. If my novel composition is to be employed in the manufacture of artificial leath-

Small British Record Firm Comes to Fore

ONE of the most energetic British phonograph record firms is the Crystalate Gramophone Record Manufacturing Co., which is now developing its business on highly competitive lines. Many firms in the record industry have been crushed by the severity of competition during the past year or two, but Crystalate has continued to forge ahead due to its consistent policy of manufacturing records at prices which, even during a depression, the public can afford to pay.

When the Vocalion Company got into low water a little time ago, Crystalate took it over and thereby removed its closest competitor. This has cleared away a big obstacle for the attainment of fresh laurels. In the future this firm expects to turn out millions of cheap composition records of light music and jazz.

Profits for the past financial year were up from £71,488 (\$357,440) to £76,792 (\$383,960), and the dividend on the ordinary stock was raised to 25 per cent.

er, it may be coated upon, for instance, a cloth support and the solvent permitted to evaporate, or the cloth support may be caused to pass through the cellulose acetate plasticizer composition and permitted to absorb the solution, the solvent in the coating being then permitted to evaporate.

Two claims follow:—

1. A composition of matter comprising cellulose acetate and approximately an equal amount of salicyl aldehyde.

2. A coated textile which comprises a fabric base coated with a composition of matter comprising cellulose acetate and approximately an equal amount of salicyl aldehyde.

Following are the specifications of U. S. Patent No. 1,858,287: I have found that it is possible to incorporate with 100

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parts of cellulose acetate approximately 100 parts (or in other words approximately 100%) of ethyl acetyl-glycolate. This novel composition of matter is produced by merely mixing the plasticizer with cellulose acetate and then adding sufficient of a common solvent, such as acetone (assuming acetone-soluble cellulose acetate is employed), whereupon an intimate mixture of the plasticizer with the cellulose acetate results. The amount of acetone or other common solvent to be employed varies, of course, within rather wide limits depending upon the fluidity of the composition desired. 100 parts of acetone will suffice for many purposes, although I prefer to use 400 parts. Various high boilers or evaporation retardants, such as ethyl lactate, amyl acetate or the like may also be added if desired, as is well known in this art.

Two claims follow:—

1. A composition of matter comprising cellulose acetate and approximately an equal amount of ethyl acetyl-glycolate.

2. A coated textile which comprises a fabric base coated with a composition of matter comprising cellulose acetate and approximately an equal amount of ethyl acetyl-glycolate.

Mixing and Pulverizing

(Continued from page 275)

about one-half to three-quarters of an inch, suitable in size to be fed to the pulverizers producing the finished product. The entire manufacture seems simple yet at each stage very definite problems arise. The percentage feeders must be accurate, easily adjusted to varying quantities. The mixers must be dust tight, with self cleaning discharge, and easily accessible for thorough removal of last traces allowing of a quick change over to different products.

The grinders must be uniform in action, simple to clean, protected from over heating. This protection may be furnished

PLASTICS & MOLDED PRODUCTS

through either air suction or by water cooling. Air suction is used when the grinder is limited to one finished product since the use of fans and other air equipment does not allow of ready cleaning. The water cooled screw type of pulverizer is more compact, more readily cleaned, and more adapted to plants using a train of apparatus for materials in a definite color range. Either type is capable of producing the correct granulation which varies with the nature of the plastic and method of moulding. The screw feed machine, known as the Master pulverizer is also capable of producing a finer granulation when wanted.

Preliminary Crushing

The preliminary crusher introduces special problems, mainly economic. This must be a low priced machine, sturdy yet large mouthed to readily handle the wide sheet. A special machine has been developed for this purpose and furnishes a splendid answer to this problem.

The moulder too, has a special need for pulverizing machinery. In the production of moulded articles there is always a certain percentage of waste due to imperfect product. These pieces may be reground and used—eliminating the complete loss of material, and allowing of maximum recovery.

In a discussion of this nature it is difficult to point out specific answers to the various problems. Plastic manufacture is not a cut and dried process. There are still specific problems to be met—and as the industry expands and develops new outlets—new specifications will have to be met, sufficient to tax the resources and ingenuity of the plastic manufacturer and his supplier of equipment. However sufficient experience has now been had by machinery builders so that they may cooperate with the plastic maker to overcome these problems as they arise.

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The entire Plastics Industry, especially during the present disturbed conditions, realizes that the only sound foundation on which to build a business is one of fair dealing with its customers. A firm cannot convert losses into profits by endangering its reputation, either by unfair competition in established markets or personal exploitation of new applications. And the industrial buyer, to-day, realizes that business placed at a loss to the supplier usually results in rejects, unfulfilled delivery promises and general incomplete service.

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Book Review

Handbuch der künstlichen plastischen Massen. (Synthetic Plastics Handbook). Dr. Oskar Kausch. J. F. Lehmanns Verlag. Munich 2, S. W. 352 pages. Paper M. 20, Cloth M. 22, 1931.

THE author of the present work follows the path broken by Worden, Ellis, Scherer, Böckmann, and more latterly by Scheiber and Sändig, and brings the history of the development of synthetic plastics, as recorded in the Patent Offices of seven nations, more up to date. Dr. Kausch is eminently qualified for this task for not only is he editor of *Kunststoffe*, the oldest publication in the plastics field but also an official of the German Patent Office (Oberregierungsrat und Mitglied des Reichspatentamtes).

Over 2,000 patents are cited in tracing the development of the materials that are commercially established as well as those in the research stage. In the light of sheer bulk, more space is devoted to the cellulose derivatives than any other class of plastic. This group, though, includes a resumé of the work of Stevens and his contemporaries

who flourished in the 1890's. A tabulation of the Eastman Kodak Company patents, 85 in all, covering a wide range of solvents and gelatinizing agents for cellulose ethers, should prove helpful to specialists in this field, because of the present interest in this type of plastic.

The chapter covering plastics made by polymerization of organic compounds, including vinyl and styrol plastics, is very sketchy but the chapter on condensation products is rather more informative. The volume as a whole is justifiable on the ground that patent data in the various journals is not classified with regard to types of materials. In the present volume, except for the German patents, the data seems incomplete.

The volume is very well indexed. The patent number index, the subject index and the index of names make references readily accessible. A trade name index of approximately 350 entries is also included as well as a directory of literature.

just. Patent Office officials are uniformly high types of men, morally, legally and intellectually.

In many foreign countries, a patent becomes automatically void if annual taxes are not paid. In this country, the life of a patent is not so conditioned. There are no taxes on patents as such. In numerous foreign countries, a patent must be granted, if at all, within a certain limited period. In the United States there is no statutory limit on the period during which a patent application may remain pending. The great benefit of this to the inventor is that it gives him a chance to perfect his invention in secrecy because patent applications are kept strictly secret and confidential while they are pending. During recent years this seems to be the chief target of criticism at which certain large corporate interests have been shooting. But this is one of the features of our patent system that has fostered invention since the system was established by our forefathers, and it is to be hoped that it will not succumb to the epidemic of reform and statute making that has scourged this country in recent years.

The Lone Inventor

Suppose an inventor, one not employed by a large corporation, conceives an important invention. He conceives the broad features but it is an invention that requires say ten years in order to perfect in tangible commercial form. If he is to secure patent protection he must either apply for a patent now or wait until perfection is achieved. If he waits ten years he risks the contingency that during that period some later inventor may conceive the same or a similar idea and "beat him to it". Suppose that he decides to apply now for a patent and that, as in England, the patent must issue if at all within eighteen months. He has not had time to perfect his invention and file other applications cover-

Patents and Prosperity

(Continued from page 277)

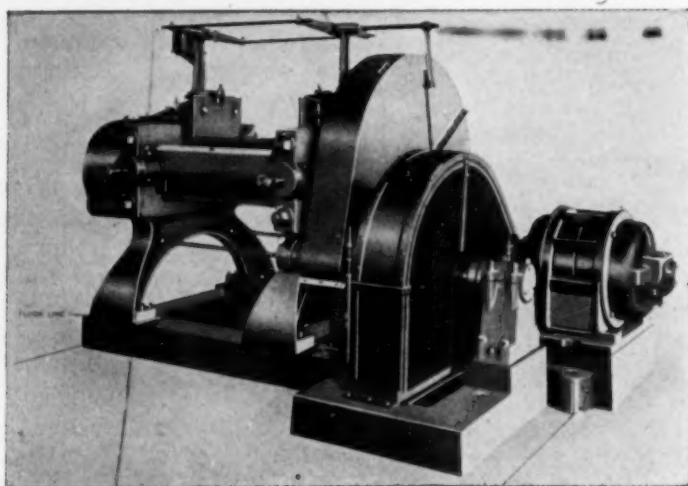
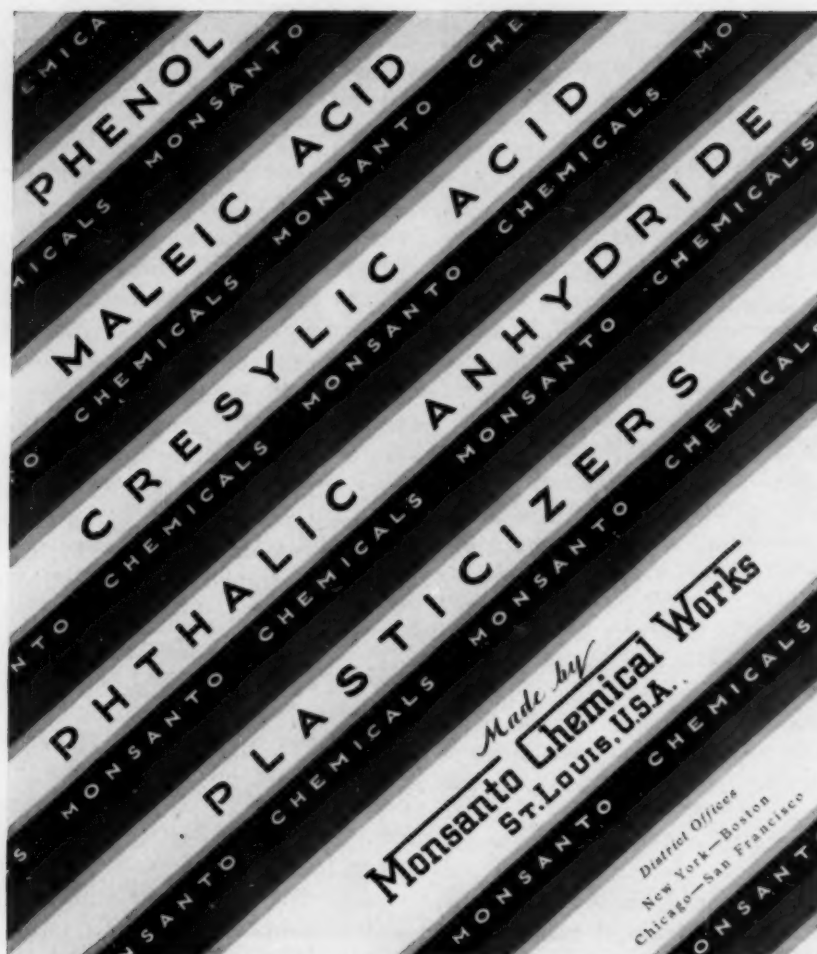
Tom's ideas and competing with him. The states, recognizing the need of centralized government authority to foster invention, gave to the Federal government at a very early date the constitutional power to enact such Federal legislation as would encourage inventors, this constitutional authority being written as follows (U. S. Constitution, Art. 1, Sec. 8):

The congress shall have power to promote the progress of science and useful arts by securing to authors and inventors for limited times the exclusive right to their respective writings and discoveries.

Upon this basis as a foundation, has been erected the impos-

ing structure of statutes and judicial decisions known as the patent law of the United States, and it is this law together with the activity of inventors and the vision of capitalists to which much of our national material progress is due. Necessity is the mother of invention, but the patent law is its guardian.

Regarding the governmental instrumentality having to do with the creation of patent rights, it can truly be said that no better patent system exists in the world than that which functions in the United States Patent Office in Washington. It is a highly efficient organization and what is more important its tribunals are eminently fair and



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ing improvements. At the end of eighteen months the broad idea is disclosed to the world. Suppose the invention is an epoch-making one relating to automobiles. The issuance of the patent so soon after the conception of the idea and application for patent spills the fat into the fire. Every motor car manufacturer begins to make improvements and to apply for and secure patents covering the improvements. The inventor is then tied hand and foot. He cannot manufacture and sell without infringing the improvement patents. By the same token, the improvements cannot be made and sold without infringing the inventor's broad patent and so either a hopeless stalemate or else litigation, often disastrous to the inventor without means, results.

More Invention Needed

As the law now stands in the United States, the inventor is not forced to a premature issuance of his patent. On the other hand, if the inventor wishes to have his patent promptly issued, he can secure reasonably prompt response and every effort is now being made to speed up such action. Is it likely to foster invention if we go back to the laws of Europe and arbitrarily reduce the time during which a patent application may remain secret within a period limited by a statute?

What this country needs is more invention, not less. Propaganda to discourage invention is not going to help us out of the depression. This country has lifted itself out of previous depressions, to a substantial extent at least by its own bootstraps, by turning to new developments and fostering the brilliant achievements of practical inventors.

On April 11, a new Patent Office was formally opened in Washington and the following statement is quoted from the United States Daily of April 9, referring to that occasion:

The value of Patent Office work to American welfare is inestimable. Our whole commer-

PLASTICS & MOLDED PRODUCTS

cial structure is vitally involved in the efficiency of this organization. The volume of trade and business that is based upon patent rights and upon goods produced by machines and devices covered by Letters Patent makes up by far the greater part of our interchange of goods.

—And Business Activity.

Let there be as little arbitrary statutory restriction as possible on our patent system. The federal courts can take care of progress in their jurisdiction by the orderly processes of judicial decisions. In the Patent Office the Commissioner has considerable discretion and this can be broadened if necessary so that the Commissioner can consider any specific case of alleged abuse of privileges and decide each case on its own facts.

We need not more statutes but more business activity. Business activity inevitably follows meritorious invention. Let us, therefore, do everything in our power to encourage invention, in a word "to promote the progress of science and the useful arts", and thereby hasten the return of normal prosperity.

Pyroxylin Costume Jewelry

(Continued from page 274)

red, green, yellow, black and white, and disposed like a rainbow. This has been created to match the new striped jersey scarfs or sweaters and it enjoys the greatest vogue at the present moment. There is also a combination of red, white and blue, for which great success is predicted. It is generally foreseen that this tri-color scheme will predominate in feminine accessories for the summer.

For chokers and short necklaces in general, pastel shades are less in evidence. There are still a few quartz pink and transparent blues used in plastic composition, but the colors in evidence are rather deep green and dark shades of blue, among which lapis-lazuli imitations have the first place.

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TECHNICAL ABSTRACT SECTION

A Review of Literature and Patents

Fabric-Containing Moldable Composition. Clinton Bateholts, assignor to Colasta Co., Inc., of Hoosick Falls, N. Y. U. S. P. 1,853,332; April 12, 1932.

A moldable composition for a resinoid body, comprising an impregnated mass of cloth small-sheets, said sheets being of material which had, before the impregnation, a slippery surface, as of rayon; the said impregnation being with material which is moldable to make the said resinoid body; whereby, during the molding, the said slippery surface facilitates the flowing of the cloth with the plastic resinoid in slender parts of the mold.

Coumarone-Indene Resin. Alphons O. Jaeger and Johann A. Bertsch, assignors to the Selden Co. of Pittsburgh, Pa. U. S. P. 1,853,565; April 12, 1932.

Example

Benzol plant residues are dissolved in a solvent such as solvent naphtha or similar solvent which is relatively unaffected by halogen, for example carbon tetrachloride or nitrobenzol. After solution is complete, the mixture is subjected to partial chlorination with elementary chlorine, phosgene or a substance giving off chlorine. In most cases, 2-5% chlorine is sufficient. Bromine is added in small quantities as a catalyst or a chlorine carrier. After halogenation is complete, the product is washed with water and the solvent naphtha distilled off. The distillate is then further heated and steam or inert gas is passed through the liquid to remove oils or naphthalene. The higher the heat, the greater the polymerization due to the heat and correspondingly, the higher the melting point of the resins which will result. In general, however, the heat should not be carried above 270° C. in order to prevent undesirable darkening of the resins. A portion of the chlorinated products are removed, the amount depending on the temperature used, or some of them may be polymerized together with the coumarone and indene products present. The resulting resins are dried and vary from very light to brownish, whereas resins produced without chlorination are deep brown to black.

Olefin-Polysulphide Plastic. Nathan M. Mnookin, of Kansas City, Mo., assignor of one-half to Joseph C. Patrick, of Kansas City, Mo. U. S. P. 1,854,480; April 19, 1932.

The method of stabilizing a mixture of plastic reaction products of polysulfides and olefins of the formula C_nH_{2n} and sulfur, which comprises heating said mixture to a high temperature and for a sufficient length of time to impart to the mixture substantially permanent qualities of softness and pliability.

Phenolic Plastic Composition and Colloid Mill Method of Preparing Same. Harold C. Cheetham, of Bloomfield, ew Jersey, assignor to Bakelite Corp. U. S. P. 1,855,384; April 26, 1932.

Example 1

A reactive phenol resin, which may be of the liquid type, is prepared by known methods: 33 parts by weight of this resin are added to 66 parts of water, together with 7 parts of gum arabic, and the mixture passed thru the colloid mill, yielding a milky, mobile, nonsticky substantially neutral substantially neutral liquid, which is a stable emulsion and may be diluted to any extent with water. Properly prepared emulsions withstand boiling temperatures, but the resin may be precipitated by certain electrolytes, among which ferrous chloride, alum and tribasic sodium phosphate have proven effective. The emulsions may also be broken by certain additions which are not electrolytes, as for example gas-black. Such reagents as are capable of breaking the emulsion will be referred to here-in simply as "precipitants."

Example 2

A non-reactive phenol resin is melted, and 50 parts by weight are stirred into 50 parts of warm water containing in solution 7 parts of gum arabic, and the mixture is run through the colloid mill which has been preliminarily warmed. The resulting emulsion is very fluid and stable, and sufficient hexamethylenetetramine to render the resin reactive may be dissolved in it without danger of precipitation.

Such emulsions may be employed in various ways. For example, they may be used, like alcoholic varnishes, for coating the fibres contained in sheets of paper, woven fabric and the like; and these sheets may be superposed and consolidated by hot-press molding to form composite or laminated sheets, tubes or other forms, as is now understood in this art.

Or a fibrous material such as wood flour, sulfite pulp, asbestos pulp or the like may be thoroughly beaten with the emulsion, using any desired proportions of fiber to resin; and the resin may then be precipitated on the fiber by such precipitants as are mentioned above. The resulting pulp may be run onto a screen for the preparation of sheets, which may then be dried; or the water may be removed from the pulp by draining, pressing or drying, or any combination of these, and the dry mixture applied in the usual hot-press or cold-press molding operations.

Vitreous Polymerized Styrol. Iwan Ostomislensky, and Willis A. Gibbons, assignors to the Naugatuck Chemical Co., of Naugatuck, Conn. U. S. P. 1,855,413; April 26, 1932.

A process for producing tough vitreous polymerized styrol from a mixture of styrol and high-boiling liquid hydrocarbons which comprises heating said mixture containing at least approximately 40% of styrol at approximately 80-200° C. under atmospheric pressure until polymerization of the styrol to the tough modification occurs, precipitating the polymerized styrol from the resulting mixture by alcohol, removing impurities from the precipitate by extraction, dissolution and reprecipitate, and heating at approximately 100-110° C. to remove residual dissolution and extracting agents and to recover said vitreous polymerized styrol.

Cellulose Ether Compositions. Horace H. Hopkins and John B. Segur, assignors to E. I. Du Pont De Nemours & Co., of Wilmington, Del. U. S. P. 1,855,744; April 26, 1932.

Example 1

We take an ethyl cellulose soluble in butyl alcohol but not soluble in gasoline, and prepare from this ethyl cellulose a butyl alcohol solution containing 8% of the ethyl cellulose. The result is a solution having a viscosity of 2.75 poises. To this solution gasoline is added in the portions 2 parts butyl alcohol to 1 part gasoline, and the viscosity of the mixture was found to have the value 1.44 poises. We have found that we may vary the proportion of non-solvent to a certain extent, and that the variation in viscosity is small for mixtures containing the non-solvent in portions varying from 1/3 to 2/3 of the whole.

Example 2

We prepare a solution of an ethyl cellulose containing butyl alcohol and benzene in the proportions of 8 parts ethyl cellulose, 33 parts butyl alcohol, and 67 parts benzene. In this solution the alcohol and benzene have combined solvent power distinctly in excess of the sum of the separate solvent powers.

Desk Pad of Transparent Pyroxylin.

Charles J. Gutberlet, of Philadelphia. U. S. P. 1,856,160; May 3, 1932.

A desk pad comprising in combination, a foundation, formed of a stiff piece of pasteboard, a transparent face, spacers, formed of flexible material positioned between the face and the foundation and glued to the latter, at the sides of the desk pad, and forming spacing strips extending along the sides only of the desk pad and between the said face and said foundation, whereby a permanent separation is maintained at the bottom of the desk pad, and clamps, of textile material, enclosing the corners of the desk pad and binding the foundation to the face at the corners of the desk pad.

Preparation of Aryl Phosphates. Fred Bryner, assignor to the Dow Chemical Co., of Midland, Mich. U. S. P. 1,856,862; May 3, 1932.

Example

3 moles of phenol was reacted with one mole of phosphorus oxychloride in the presence of one-half percent of substantially anhydrous magnesium chloride, the temperature being maintained at 95-105° C. until all of the phosphorus oxychloride was added, and then raised to approximately 150° C., at which temperature the reaction was finished. Volatile chloro compounds were then blown out from the liquid reaction product by means of air, and the product washed first with water and then with dilute caustic soda solution at a temperature sufficiently to keep the reaction product in the liquid form. After cooling, the solidified granular product was separated from the liquor by centrifuging, and then further purified by charcoal treatment and recrystallization from alcohol.

Hydrolysis of Cellulose Acetate. Harry Le B. Gray and Cyril J. Staud, and Charles S. Webber, assignors to Eastman Kodak Co., of Rochester, N. Y. U. S. P. 1,857,190; May 10, 1932.

In the process for the manufacture of cellulose acetate the step which comprises hydrolyzing an organic acid solution of cellulose acetate in the presence of ethylene chloride.

In the process for the manufacture of cellulose acetate the step which comprises hydrolyzing an acetic acid solution of cellulose acetate in the presence of ethylene chloride and a mineral acid catalyst.

In the process for the manufacture of cellulose acetate the step which comprises hydrolyzing an acetic acid solution of cellulose acetate in the presence of ethylene chloride, a mineral acid catalyst and water and when an acetone soluble product has been obtained precipitating the hydrolyzed product in hot water.

In the process for the manufacture of cellulose acetate the step which comprises hydrolyzing an acetic acid solution of cellulose acetate in the presence of ethylene chloride, the ethylene chloride being at least 25 percent of the acetic acid present, a mineral acid catalyst and water and precipitating the acetone soluble product formed in a hot coagulating medium.

Shellac Substitutes. Isadore Sidney Mellanoff, of Philadelphia, Pa., assignor to Kemikal, Inc. U. S. P. 1,857,691; May 10, 1932.

The process of producing a shellac substitute comprising making a solution of about 100 parts of casein in about 400 to 800 parts of water containing about 16 parts of borax and about 10 parts of 26% ammonium hydroxid and then slowly adding about 4 parts of the casein solution to about 5 parts of a condensation product made by stopping the condensation process of phenol and formaldehyde which takes place in the presence of a material acting as a catalyst or reagent at such a point that the con-

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Fig. 1

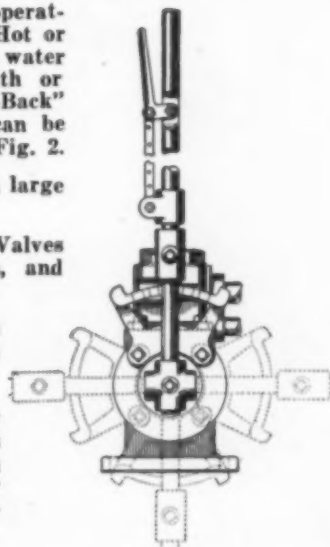


Fig. 2

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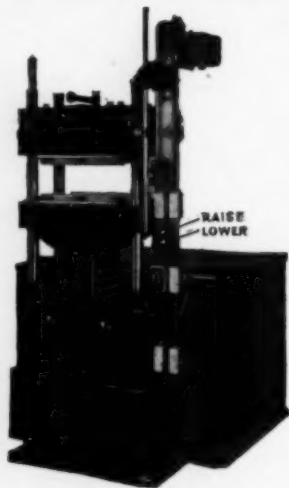
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densation product is a substantially transparent material which on cooling to ordinary temperatures remains somewhat liquid while stirring.

Molding, Coating, Filling, Impregnating, and Binding Plastic Composition. Isadore Sidney Mellanoff, of Philadelphia, Pa., Assignor to Kemikal, Inc. U. S. P. 1,857,690; May 10, 1932.

The method of saturating or impregnating material with the condensation product of an alkaline solution of peat reacting with an aldehyde and a phenolic body comprising, forming a solution of about one part of the condensation product when the mass is in a syrupy state to about 10 to 20 parts of solvent, treating the material to be impregnated with the solution, making a solution of about one part of the syrupy mass to about 2 to 5 parts of solvent, treating the material with the last mentioned solution, and completing the reaction by heating and pressing the impregnated material.

Flexible, Non-Metallic Printing Plates. Frederick C. Goldenbaum, Assignor to Herbert Photos, Inc., of New York, N. Y. U. S. P. 1,857,842; May 10, 1932.

The method of preparing a flexible non-metallic photographic printing plate which comprises producing a half-tone copper engraving matrix from a photograph, providing the copper engraving with a clear line printing caption and description outside the half-tone portion and with ridges and depressions on the outer edges, preparing a lead mold matrix from said copper engraving by pressing the lead into the copper engraving and utilizing the ridges and depressions on the edges of the copper engraving to prevent side-wise flow of the lead under pressure and molding the flexible non-metallic printing plate from the lead mold by heat and pressure and confining the edges of the lead mold from spreading during the printing plate molding operation utilizing the ridges and depressions of the copper engraving as a border for the photograph.

Production of Low Viscosity Cellulose Esters. Carl J. Malm and Arne Anderson, Assignors to Eastman Kodak Co., of Rochester, N. Y. U. S. P. 1,857,562; May 10, 1932.

As an example of the manner in which our invention can be applied to the reduction of the viscosity of cellulose nitrate we may state that a slow stream of gas containing ozone was also passed through cellulose nitrate, ten grams of which when dissolved in 100 ccs. of a fifty-fifty mixture of acetone and methyl alcohol had a viscosity of 6,700 centerpoises. After fifteen minutes of ozonizing treatment we found the cellulose nitrate to be well bleached but the viscosity thereof not to have been appreciably lessened. However, after the ozonizing treatment had been continued for a period of one hour we found that a solution of ten grams of the ozonized nitrate when dissolved in 100 ccs. of a fifty-fifty mixture of acetone and methyl alcohol had a viscosity of only 600 centerpoises.

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And Now, In Closing:

A LETTER from Dr. Arthur D. Little . . . and a 'phone call from J. F. Walsh . . . are to assure us that Mr. Walsh has not left the Little organization and has no intention of doing so . . . the last-minute informant who gave us such wrong information for our June issue will no longer act as a listening-post . . . our apologies to both Mr. Walsh and Dr. Little AND our readers . . . H. I. Hill, formerly Treasurer of the Celluloid Corporation, has taken Charles F. Reeves' place as Vice President in charge of Sales for that company . . . The urea situation gets more publicity: . . . counsel for Ellis-Foster Company motioned that the suit brought by them against the Aldur Corporation . . . (for infringement of Ellis-Foster patents) . . . be dismissed . . . This was done, without prejudice, Judge Campbell charging costs to the plaintiff . . . It is our guess that we have not heard the last of this . . . The leading article in our June issue . . . "Our Homesick Plastics" by F. E. Brill (Durez) . . . has brought us many letters of commendation . . . which shows, as we contend, that one good, sound thought is worth a ton of ballyhoo . . . And another set of readers, pointing to the Sun-culator article, say that acetate sheeting is also being used for women's sun hats . . . C. K. Davis, recently elected President of Roessler & Hasslacher Chemical Company, has also been elected Chairman of the Board of the Pacific R. & H. Chemical Corp. . . . As this is being written, Richard S. Childs, President of Synthetic Plastics Company, is on the high seas for Europe . . . and we imagine he will find the same high seas hitting new lows, judging from the weather . . . Canadian Industries, Ltd., have started operations at their new transparent sheeting plant in Shawinigan Falls . . .

CHANGE OF ADDRESS!

Early this month we moved our offices to 420 Lexington Avenue, the Graybar Building, adjoining the Grand Central Station. The resulting confusion delayed final closing of this issue, and we regret that it is so necessarily late in reaching our clients.

We hope that our friends will take this as a personal invitation to visit our new quarters. We feel that this central location will enable us to give to everybody quicker, more extensive service.

For the sake of your own records, please make a note of this now.

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FORREST U. WEBSTER, general Advertising Manager of Cutler-Hammer, has been elected President of the National Industrial Advertisers' Association. Allan Brown, of Bakelite, who retired as President to become a member of the Board, was voted a lifetime membership in the organization in appreciation of his services. In his address to the convention, held in Cleveland, Mr. Brown said, in part:

"I need hardly tell you that we are in the third year of a war. It is no time for slackers. It is time we stopped being business pacifists to become business crusaders. The fact that more fortunes have been lost in the last three years than in any other comparable period in our national history is merely an indication that more fortunes will be made in the next few years by those who take advantage of this unusual opportunity and grow up with the new order."

WRITING in the May issue of FORBES, Harwood F. Merrill asks, "Can Price Wrecking be Stopped?" In the early paragraphs he states:

"Over a field strewn with red ink statements, bankrupt dealers, dissatisfied customers, and

protesting stockholders, practically every important industry in this country has been waging a price war.

Are American manufacturers and retailers, forced by the tremendous losses from cut-throat price competition in the last 2 years, beginning to take a firmer stand on prices? Are they at last refusing to sell unless they can make a profit? Or will the scramble for profitless volume go merrily on?"

Then, going on to state that 1932 developments may end this warfare in some industries, Mr. Merrill cites the example of several concerns, in various fields, who dropped a bomb by raising prices, and he concludes:

"And so it goes—price competition within an industry; and not only that, but price competition from without. Can it be stopped?"

To do a complete job, manufacturers must:

1. Know their costs, so they will know if their sales are profitable or made at a loss.
2. Co-operate completely, and be willing to stand to the last ditch in refusing to sell below cost.
3. Keep production and productive capacity in line with current demand.
4. Find a way to handle the marginal and shoe-string producer, whether by co-operation, by consolidation, by squeezing them out of the picture, or by setting prices at a level where they won't be tempted to make cuts."

KEEP those four points in mind, you who have been sufferers from this battle. More than that, take them up in your Association meetings, in your dealings with others and in your own business life. This price war can be stopped, but it takes a definite program,—and, as we said in our December editorial, "guts".

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